UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/085,219	02/28/2002	David B. Kramer	7-20	6969

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EXAMINER
MURPHY, RHONDA L

ART UNIT	PAPER NUMBER
2616	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/29/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

PTOL-90A (Rev. 10/06)

	Application No.	**Applicant(s)**
Office Action Summary	10/085,219	KRAMER ET AL.
	Examiner	**Art Unit**	
	Rhonda Murphy	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>26 September 2006</u>.

2a) ☒ This action is **FINAL.**   2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>1-22</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☒ Claim(s) <u>16 and 17</u> is/are allowed.

6) ☒ Claim(s) <u>1-15 and 18-22</u> is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on <u>28 February 2002</u> is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date <u>10/6/06</u>.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____ .

DETAILED ACTION

Response to Amendment

1.   This communication is responsive to the amendment filed on 9/26/06.

Accordingly, claims 1-22 are currently pending in this application.

Claim Objections

1.   Claim 22 is objected to because of the following informality: It is suggested to

rephrase the limitation "An article of manufacture comprising a machine-readable

storage medium..." by stating "A computer-readable medium comprising software

programs...". Appropriate correction is required.

Claim Rejections - 35 USC § 103

1.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2.   This application currently names joint inventors. In considering patentability of

the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g)

prior art under 35 U.S.C. 103(a).

3.   Claims 1 – 15 and 18 – 20 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Nguyen et al. (US 5,712,851) in view of Lauffenburger et al. (US .

6,661,774) and Delp et al. (US 6,477,168).

Regarding claim 1, Nguyen teaches scheduling circuitry (Fig. 1; processor 24) for

scheduling data blocks for transmission from a plurality of transmission elements (col. 2,

lines 1-24); establishing a traffic shaping requirement for the transmission of the data

blocks from the transmission elements (col. 4, lines 39-45); wherein the scheduling

circuitry is configured for utilization of at least one time slot table (see Fig. 1), the time

slot table comprising a plurality of locations (see Fig. 1), each of the locations

corresponding to a transmission time slot and being configured to store at least one

entry (col. 4, lines 39-45), the scheduling circuitry being operative in conjunction with the

time slot table to schedule the data blocks for transmission in a manner that

substantially maintains the traffic shaping requirement established by the traffic shaping

circuitry in the presence of collisions between requests from the transmission elements

for each of one or more of the time slots, through the use of a linking of colliding

transmission elements (Figs. 1 and 2; col. 4, lines 39-60).

Although Nguyen describes establishing a traffic shaping requirement, Nguyen

fails to explicitly disclose traffic shaping circuitry coupled to the scheduling circuitry. It

would have been obvious to include circuitry for traffic shaping when a traffic shaping

requirement exists.

In addition, Lauffenburger teaches traffic shaping circuitry (Fig. 1; controller 22)

coupled to the scheduling circuitry (scheduler 24).

In view of this, it would have been obvious to one skilled in the art to modify

Nguyen's system by incorporating Lauffenburger's traffic shaping circuitry coupled to

the scheduling circuitry, so as provide circuitry for managing the transmission requests.

Nguyen and Lauffenburger fail to explicitly disclose moving at least one entry

from a first location within the at least one time slot table to a second location within the

at least one time slot table.

However, Delp teaches moving at least one entry from a first location within the

at least one time slot table to a second location within the at least one time slot table

(col. 6, lines 48-62).

In view of this, it would have been obvious to one skilled in the art to move an

entry from one location to another, for the purpose of altering the time in which an entry

is transmitted.

Regarding claim 2, Nguyen teaches a time slot table (Fig. 2), however fails to explicitly

disclose the time slot table stored at least in part in an internal memory of the processor.

Examiner takes official notice that it is well known in the art for a time slot table to be

stored in an internal memory of a processor. It would have been obvious to include a

time slot table in an internal memory of a processor, for the purpose of queuing data in

a table that exists inside of the processor.

Regarding claim 3, Nguyen teaches a time slot table (Fig. 2), however fails to explicitly

disclose the time slot table stored at least in part in an external memory coupled to the

processor. Examiner takes official notice that it is well known in the art for a time slot

table to be stored in an external memory coupled to a processor. It would have been

obvious to include a time slot table in an external memory coupled to a processor, for

the purpose of queuing data in a table that exists outside of the processor.

Regarding claim 4, Nguyen teaches a given one of the locations in the time slot table

storing an identifier of one of the transmission elements that has requested transmission

of a block of data in the corresponding time slot (col. 2, lines 53-57).

Regarding claim 5, Nguyen teaches one or more of the data blocks comprising data

packets (col. 2, lines 15-19).

Regarding claim 6, Nguyen teaches the established traffic shaping requirement is

substantially maintained by linking together identifiers of transmission elements

generating requests that collide for a given time slot, from a single entry in the

corresponding table location, and then scheduling the requesting elements for

transmission in the order in which they are linked (col. 4, lines 31-60).

Regarding claim 7, Nguyen teaches the scheduling circuitry providing dynamic

maintenance of the time slot table such that identifiers of requesting transmission

elements are entered into the table locations on a demand basis (col. 4, lines 61-67; col.

5, lines 1-8).

Regarding claim 8, Nguyen teaches identifiers of the transmission elements

comprising a structure for allowing a given one of the transmission element identifiers to

be linked to another of the transmission element identifiers (col. 4, lines 31-38).

Regarding claim 9, Nguyen teaches the event of a collision between multiple

transmission elements requesting a given one of the time slots, an identifier of a first

one of the requesting transmission elements is entered into the corresponding location

in the time slot table, and that identifier is linked to an identifier of a second of the

requesting transmission elements, with similar linking between the identifier of the

second requesting transmission element and an identifier of any subsequent one of the

requesting transmission elements, a linked list of the multiple requesting elements

thereby being created for the corresponding location in the time slot table (Fig. 2; col. 4,

lines 61-67; col. 5, lines 1-29).

Regarding claim 10, Nguyen teaches upon transmission of a data block from one of

the requesting transmission elements in the linked list of elements, a determination is

made as to whether there are any further elements linked to that element, and if there

are any further elements, the identifier of the next such element is determined and that

identifier is written into the corresponding location in the time slot table (col. 5, lines 9-

29).

Regarding claim 11, Nguyen teaches the scheduling circuitry maintaining a set of

pointers for the time slot table, the set of pointers comprising one or more of: a current

pointer pointing to the next location in the time slot table for which a data block will be

transmitted (current cell time pointer - CCTP; col. 4, lines 50-55); an actual pointer

pointing to the location in the time slot table corresponding to actual time (current slot

pointer - CSP; col. 4, lines 52-55).

Nguyen fails to explicitly disclose a free pointer pointing to the next location in the

time slot table that is a free entry with no requesting transmission element assigned

thereto.

However, Examiner takes official notice that free pointers are well known in the

art for indicating empty slots. Thus, it would have been obvious to one skilled in the art

to include a free pointer for pointing to an entry that was free to receive an assignment.

Regarding claim 12, Nguyen teaches in the event of a collision between multiple

transmission elements requesting a given one of the time slots, a linked list of identifiers

of the multiple requesting elements is created, and the current pointer continues to point

to the corresponding location in the time slot table until each of the multiple requesting

transmission elements has transmitted a data block (col. 4, lines 61-67; col. 5, lines 1-

29).

Regarding claim 13, Nguyen teaches the actual pointer advancing by one table

location for each of the data blocks transmitted (col. 4, lines 52-55).

Regarding claim 14, Nguyen teaches the current pointer advancing by one table

location after each of the requesting transmission elements in the linked list associated

with a given table location has transmitted a data block (col. 4, lines 53-65).

Regarding claim 15, Nguyen teaches current pointers and actual pointers, however

fails to explicitly disclose a free pointer. As mentioned above in the rejection of claim 11,

free pointers are well known in the art. It would have been obvious to one skilled in the

art to increment a current pointer and free pointer to coincide with an actual pointer, if

the current pointer and the free pointer point to the same location in the time slot table

and the actual pointer points to a different location in the time slot table, since both the

current and free pointer indicates the next slot to be transmitted and the actual pointer

indicates the actual slot transmitting at that time. Thus, all pointers are pointing to a

transmitting slot.

Regarding claim 18, Nguyen and Lauffenburger teach scheduling circuitry and traffic

shaping circuitry. Nguyen fails to explicitly disclose a transmit queue coupled to the

scheduling circuitry and the traffic shaping circuitry, the transmit queue supplying time

slot requests from transmission elements to the scheduling circuitry in accordance with

the traffic shaping requirement established by the traffic shaping circuitry.

However, Lauffenburger teaches a transmit queue (memory 12) coupled to the

scheduling circuitry (scheduler 24) and the traffic shaping circuitry (controller 22), the

transmit queue supplying time slot requests from transmission elements to the

scheduling circuitry in accordance with the traffic shaping requirement established by

the traffic shaping circuitry (col. 3, lines 41-53).

In view of this, it would have been obvious to one skilled in the art to modify

Nguyen's system by include a transmit queue coupled to the scheduling circuitry and

traffic shaping circuitry, so as to provide transmission requests to the scheduler.

Regarding claim 19, Nguyen teaches the processor comprises a network processor

configured to provide an interface for data block transfer in a network. Nguyen fails to

explicitly disclose data block transfer between a network and a switch fabric. Examiner

takes official notice that it data block transfers between a network and a switch fabric

are well known in the art. Thus, it would have been obvious to one skilled in the art to

provide such data block transfer for the purpose of switching data through a switch

fabric.

Regarding claim 20, Nguyen teaches the processor is configured as an integrated

circuit (Fig. 3).

4.   Claims 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Nguyen et al. (US 5,712,851) in view of Delp et al. (US 6,477,168).

Regarding claim 21, Nguyen teaches a method for use in a processor for scheduling

data blocks for transmission from a plurality of transmission elements (col. 2, lines 1-

24), the method comprising: establishing a traffic shaping requirement for the

transmission of the data blocks from the transmission elements (col. 4, lines 39-45); and

scheduling the data blocks for transmission in a manner that substantially maintains the

traffic shaping requirement in the presence of collisions between requests from the

transmission elements for each of one or more transmission time slots (col. 4, lines 39-

60), utilizing at least one time slot table (see Fig. 2A), the time slot table comprising a

plurality of locations (see Fig. 2A), each of the locations corresponding to one of the

transmission time slots and being configured to store at least one entry, and further

utilizing a linking of colliding transmission elements (Figs. 1 and 2; col. 4, lines 39-60).

Nguyen fails to explicitly disclose moving at least one entry from a first location within the at least one time slot table to a second location within the at least one time slot table.

However, Delp teaches moving at least one entry from a first location within the at least one time slot table to a second location within the at least one time slot table (col. 6, lines 48-62).

In view of this, it would have been obvious to one skilled in the art to move an entry from one location to another, for the purpose of altering the time in which an entry is transmitted.

Regarding claim 22, Nguyen teaches the same limitations described above in the rejection of claim 21. Nguyen teaches a scheduler comprising a processor for scheduling data blocks for transmission from a plurality of transmission elements, utilizing at least one time slot table, the time slot table comprising a plurality of locations, each of the locations corresponding to a transmission time slot (Figs. 1 and 2).

Nguyen fails to explicitly disclose a machine-readable storage medium for use in conjunction with a processor, the medium storing one or more software programs for use in scheduling data blocks. However, Examiner takes official notice that it is well known in the art for storage mediums to store software programs and operate with processors.

Therefore, it would have been obvious to one skilled in the art to include such storage medium for the purpose of executing the programmed functions.

Allowable Subject Matter

5.   Claims 16 and 17 allowed.

Response to Arguments

6.   Applicant's arguments with respect to claims 1, 21 and 22 have been considered

but are moot in view of the new ground(s) of rejection.

Conclusion

7.   Applicant's amendment necessitated the new ground(s) of rejection presented in

this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37

CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

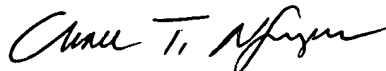than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rhonda Murphy whose telephone number is (571) 272-3185. The examiner can normally be reached on Monday - Friday 8:00 - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chau Nguyen can be reached on (571) 272-3126. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Rhonda Murphy
Examiner
Art Unit 2616

RM

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